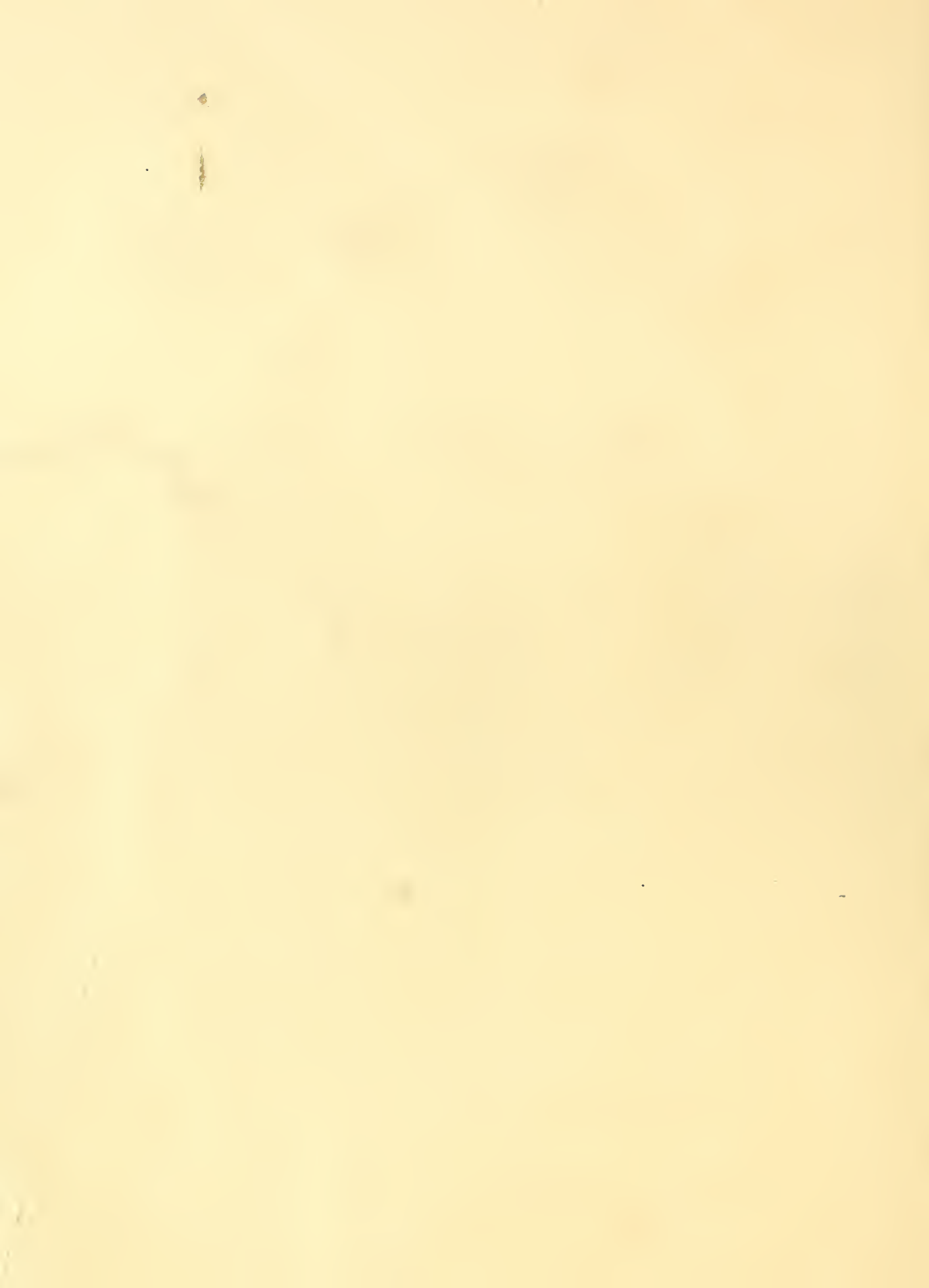


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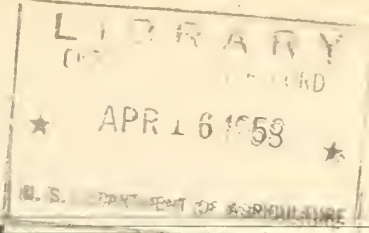


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Research Note



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THE LARCH CASEBEARER IN IDAHO - A NEW DEFOLIATOR RECORD FOR WESTERN FORESTS

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The larch casebearer (Coleophora laricella (Hbn.)) (Lepidoptera: Coleophoridae) is an insect of European origin whose appearance in this country was noted first in Massachusetts in 1886. It was probably introduced on planting stock of European larch (Larix decidua Mill.). Since then the insect has spread westward through the range of American larch (Larix laricina K. Koch) as far as central Minnesota and western Ontario.

Until 1957 the possibility of western larch (Larix occidentalis Nutt.) becoming infested by this insect seemed remote. Even though the range of American larch is transcontinental through Canada, a wide gap separates its habitat in the provinces of Alberta and British Columbia from the range of western larch in the Inland Empire. Nevertheless, in 1957 an outbreak of the casebearer was discovered in the vicinity of St. Maries, Idaho, approximately 1,700 miles distant from the last-reported infestations in Minnesota (fig. 1).

How the infestation became established in this area is a matter of conjecture. The most plausible explanation would seem to be that infestation came from planting stock from eastern states; however, there is no knowledge of any American or European larch in the vicinity. As information concerning the casebearer is published perhaps an answer to this question will be learned.

Since the casebearer is a new forest pest in this region it seems worthwhile to record its occurrence even though data are lacking regarding its ecology in western larch forests. For this reason, information presented here pertaining to its life history necessarily has been obtained largely from eastern sources. Possible differences in climate and in susceptibility of the host species may cause this insect to develop new habits in western states.

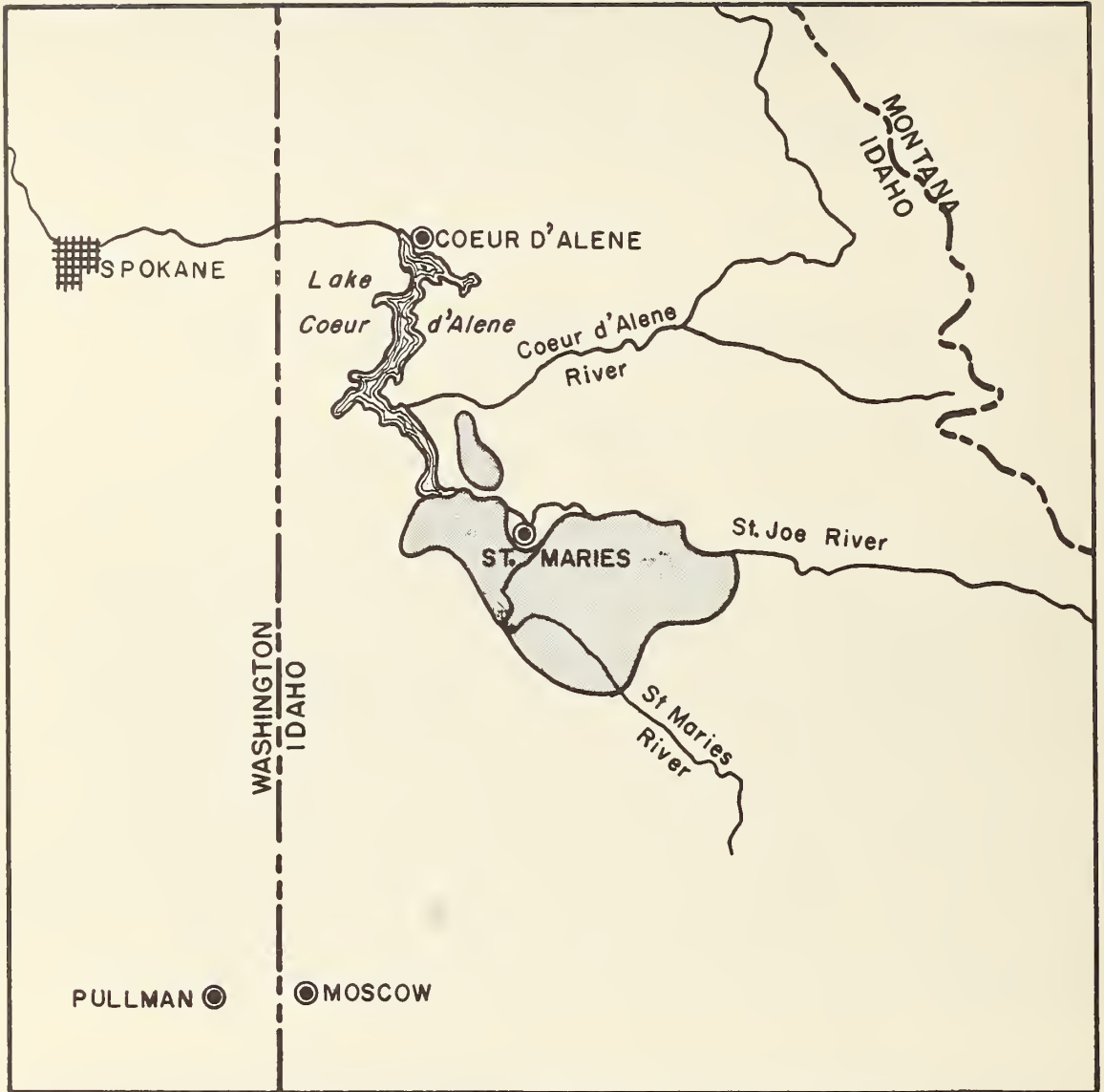


Figure 1.--Map of a portion of the Inland Empire showing the location of the larch casebearer outbreak in Idaho.

Description

The larch casebearer moth is silvery to grayish brown and has no conspicuous markings. Both wings are narrow and fringed with long, slender, hairlike scales. The wing expanse is about 3/8 inch.

Eggs are cinnamon-colored and, under magnification, resemble inverted teacups or jelly molds having 12 to 14 ribs on the sides extending from the apex to the base.

The larva is about 3/16 inch in length when fully grown and is dark reddish brown with a black head and thoracic shield. It is seldom seen in its entirety inasmuch as it encloses itself and remains mostly within a case made from a section of needle. Cases made from western larch needles by immature larvae are straw-colored and rectangular. At the time of pupation they are light gray and cigar-shaped.

Life History

In this region adult moths emerge during June and early July, and eggs are deposited at random over the foliage. Upon hatching, a larva bores into a needle and, after mining it, constructs its case by lining the hollowed portion with silk and chewing the section free from the rest of the needle. Both ends of the case are open; the larva feeds from one end and pushes the frass out of the other.

In Idaho larvae were found feeding externally upon the foliage beginning in August. Each one, in its case, chews a hole through the epidermis of a needle and then mines the interior as far as it can reach. After the larva eats one needle it moves on to another.

The insect overwinters as an immature larva inside its case, which is fastened securely by silk threads to a twig or branch or even to the main stem of an infested tree. After the normal shedding of foliage in late fall, if the insects are numerous, clusters of hibernating larvae in their cases may be found attached at the base of a spur shoot (fig.2).

As soon as the new crop of foliage appears in the spring the caterpillar resumes feeding. It attains full growth about one month later, after which it pupates inside of the case.1, 2/

1/ Craighead, F. C. 1950. Insect enemies of eastern forests. U. S. Dept. Agr. Misc. Pub. 657, p. 490.

2/ Herrick, G. W. 1935. Insect enemies of shade trees. Comstock Pub. Co., Ithaca, N. Y., pp. 138-139



Figure 2.--Overwintering larvae in their cases attached to twigs; approximately 3x natural size.

Description of Outbreak and Damage

In the 1957 infestation the casebearer was distributed over more than 15,000 acres of larch type. This extensive infestation, together with its high population level, suggested that the insect actually may have been present in Idaho for several years prior to its discovery and may be distributed beyond the present infested area.

Western larch occurs either in relatively small patches, in mixture with other conifers, or as scattered trees. In the vicinity of the outbreak most of the mature timber had been removed by logging, and the present second-growth stands contained a high percentage of larch. In many areas larch was the principal species in the understory.

Heavy casebearer populations were concentrated in dense stands of reproduction, where practically every needle fascicle on the host trees had been fed upon to some extent. Larvae were still actively feeding at the end of September, and the brownish discoloration of damaged foliage was very noticeable at that time. As the older fascicles began to fade prior to being shed, the larvae moved out to the needles of new terminal shoots that were still green. Thus, as many as three dozen larvae could be found on a single 3-inch new growth tip.

Few studies have been made of the amount of damage to larch trees caused by casebearer defoliation. Literature indicates that greatest devastation occurs from feeding during the spring months as the larvae approach maturity. In northern Michigan and New Brunswick, Canada, Webb^{3/} found a significant reduction in radial increment and in terminal growth associated with known periods of infestation. He states, however, that no tree mortality was observed in a recent outbreak in these areas.

This might be attributed in part to the fact that larch, being naturally deciduous, is much more resistant to defoliation than are other coniferous trees. Whereas other conifers cannot replace foliage once it is lost, larch frequently produces as many as two crops of needles during a single growing season. Hence it can withstand at least a single defoliation each year for some years without suffering mortality^{4/}

^{3/} Webb, F. E. 1952. The larch casebearer in the Maritime Provinces and Great Lakes region. Canada Dept. Agr. Bi-Mo. Prog. Rept. 8(1): 1.

^{4/} Graham, S. A. 1931. The effect of defoliation on tamarack. Jour. Forestry 29(2): 199-206.

Discussion

The appearance and apparent establishment of the larch casebearer in Idaho poses several pertinent questions:

- (1) Will the insect eventually assume the status of a western native?
- (2) Will its damage potential be so great that applied control may be required at times?
- (3) Should efforts be made now to eradicate it in hope of preventing further attacks in western larch?

Unfortunately, little is known concerning possible methods for artificial control of the casebearer under forest conditions. Aerial spraying has not been tried in this country, and applied control from the ground would seem out of the question. Using the only recommended insecticide, lime sulphur, applied as a dormant spray in April before the buds open, would require the thorough spraying of every infested tree.

Past experience has shown that eradication of some insect infestations is a most difficult if not an almost impossible undertaking. Chemical control of an insect like the casebearer offers many more difficulties than control of defoliators that are open-feeding forms lacking protection.

It is evident that considerable research is necessary before the several questions can be answered. Studies are being organized to determine the ecology of this insect in western larch forests as compared with that in eastern states. Immediate objectives will be: (1) to determine its distribution and behavior in the West, and (2) to determine whether some of the more recently developed insecticides are more effective than lime sulphur against the casebearer.

In addition to testing the feasibility of chemical control, further efforts should be directed toward introducing parasites from eastern states provided they are lacking in the West in the hope of reducing the population to endemic status. In any event it would seem that now an additional pest must be included among the insect enemies of western forests.

